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NOTES, NEWS, AND QUERIES

News of Peregrines in England.—My main interest is the Peregrine—population study, behavior, selective effects of hunting, and general breeding biology. (1) I am most interested in the question of how Peregrines find eyrie sites which may not have been used for 20 years then pick the exact ledge used by their ancestors, when to the human eye there appear to be many equally suitable or desirable ledges. (2) Why do Peregrines reoccupy grade III cliffs with low situated eyries and leave some of their old haunts on really first-class cliffs vacant; is it a question of food supply being better or is there in some way an ancestral tie up?

The figure you quote for 50% return of breeding population in England. In SW England Cornwall and Devon it's 10% Cornwall, 15-20% in Devon. However they are coming back to areas which were vacant since 1960. This is the most important point! Also brood size has been exceptionally high in our part of the county. Fourteen young from 4 eyries on the wing. Believe it or not 1 eyrie had 3 tiercels 2 falcons all of which flew! This year they have only produced two about 10 days old at time of writing. General outlook is much as last year. (From a letter, May 19, 1971, by R. B. Treleaven, *Rockmount, Launceston, Cornwall, England.*)

Raptor Work in the Peace Corps.—Among a variety of environmental assignments presently available are two relating to raptors. In the Philippines an ornithologist is needed "to undertake extensive field study of the Monkey-eating Eagle and assist in the development of protective measures to save it from extinction." In Colombia an ornithologist is also needed who "will work at the Parque Purace and the National Condor Refuge to carry out an inventory of the birds in the park and work with a program underway to protect the last of the Colombia [Andean] Condors." Additional information is available from Dr. Richard L. Jachowski, Smithsonian Peace Corps Environmental Program, Smithsonian Institution, Washington, DC 20560, or Robert K. Poole, Director, Environmental Programs, Peace Corps, Washington, DC 20525. (Information from Peace Corps announcement, May 1971.)

SHORT CONTRIBUTIONS

Semen Extender for Artificial Insemination.—Each season, when Professors John Skinner and Roy Haller of the University of Wisconsin come to help with artificial insemination, we learn something new—this year it was **semen extender**. If a tiercel does not give enough semen for artificial insemination, the semen can be extended by adding from a mixture of yolk of one egg and skim milk in equal parts.—**Frances Hamerstrom**, *Plainfield, Wisconsin* 54966.

Peregrine Vanished as a Breeding Species in Switzerland.—Data published in Hickey's "Peregrine Falcon Populations" come up to the year 1968. In 1969, no breeding pairs were found, despite a very thorough research. In 1970, we knew of one single brood, with one young bird. This same pair was present at its cliff until January 1971 but a month later, the old female had been replaced by a young one, for unknown reasons. Thus, no brood is to be expected there this year. Until now, I have not received any news of successful broods anywhere in Switzerland.—**Hans Herren**, *14 Winterfeldweg, 3018 Bern-Bumpliz, Switzerland*.

**RESEARCH PLANNING CONFERENCE
ON PEREGRINES AND OTHER BIRDS OF PREY
CORNELL UNIVERSITY, ITHACA, NEW YORK,
NOVEMBER 7-9, 1969 — Part 1**

by
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The following is a report on the conference attended from November 7-9, 1969, at Cornell University where research on birds of prey was discussed. Particular attention was noted on the effects which pesticides and industrial pollutants are having on this group of birds. The major concern was with the Peregrine Falcon (*Falco peregrinus*) whose worldwide decline has been so marked in recent years. November 7 was spent in presentation of papers and discussion on topics concerning this species. On November 8 papers and discussions were concerned with other species, including Bald Eagles (*Haliaeetus leucocephalus*), Prairie Falcons (*Falco mexicanus*), Merlins (*Falco columbarius*), Marsh Hawks (*Circus cyaneus*), Cooper's Hawks (*Accipiter cooperi*), and Red-shouldered Hawks (*Buteo lineatus*). This was followed by a general discussion on raptors and research problems involved with them. On November 9, a short meeting was held to continue the discussion on future raptor research, and also to discuss the role of Raptor Research Foundation Inc. The following are summaries of papers and discussions presented at this conference. [Editor's note: For various reasons our original plans for a report did not materialize. We are thankful to Keith Hodson, Richard Fyfe, and the Canadian Wildlife Service for making this account available to us. One or more parts will complete the report in succeeding issues.]

Session of November 7, 1969

Peregrine Falcons - Breeding Populations

Richard Fyfe (Northwest Territories, Yukon Territory, Alberta, Queen Charlotte Islands). Three populations of Peregrine Falcons in the Northwest Territories were under con-

sideration, (1) in the central barrens, (2) in the District of Mackenzie, and (3) along the arctic coast.

In 1966 an initial survey of Peregrine Falcons in the central barrens was conducted by Ernie Kuyt (Canadian Wildlife Service). This survey was followed up in 1968 by Kuyt and Fyfe. Of twelve territories checked in 1968 six were found occupied. Five of the six were visited and three were found to be active with 3 young, 2 young and 1 addled egg, and 3 unhatched eggs respectively. The area was checked again in 1969 and of 11 territories checked (one by aircraft only) five were found to be occupied; of these again only three were active with 1 young and 1 addled egg, 1 young and 2 addled eggs, and 3 eggs in the nests. The manner of decline appears similar to that noted elsewhere, *i.e.*, birds with a history of long occupancy at a particular eyrie would be unsuccessful one year, then perhaps only a lone bird would be present the following year, and finally no birds would be present at all.

Areas in the Mackenzie District were first surveyed separately in 1966 by J. Enderson and K. Hodson and a total of 14 occupied nests were found. In 1969 this population was rechecked by Hodson and of 13 eyries visited only 10 were occupied and 6 eyries were successful in producing young. Fifteen young were produced for an average of 1.5 young per occupied eyrie. One of these young was found dead at one nest for unexplainable reasons.

Because of reports of a good Peregrine Falcon population along the arctic coast, this area was checked in 1968 and 1969. In 1968, 5 occupied eyries were found, 4 of which were active in producing 10 young. In 1969, 9 eyries were found which included the 5 previously known eyries. Three of these eyries, including one found in 1968, were apparently unsuccessful in their nesting attempts. The remaining 6 eyries produced 18 young, however, at one eyrie all three young were dead and at another 2 of the 4 young were dead, for no explainable reasons. These birds were between 1 and 3 weeks of age. Two addled eggs with embryos ready to hatch were also found.

In 1967 and again in 1969, 9 eyries were checked in the Yukon Territory by John Campbell. Reproductive success was the same on both years and no decline is indicated.

In general, available data since 1966 and particularly from the past two years, indicate that a decline of Peregrine Falcon populations in at least some areas of the Canadian arctic may be occurring. A 50% decline in the central barrens and a 29%

decline in the District of Mackenzie in the number of occupied eyries since 1966, as well as the unexplained deaths of 6 young Peregrines is noted. However, a common widespread cause such as weather factors affecting Peregrines over a wide area in 1969 should not be overlooked as a possible factor. Table 1 summarizes reproductive data of Peregrines in the arctic coast area, District of Mackenzie, and the Yukon Territory.

A widespread survey throughout the southern prairies and over much of the Peace River country of Alberta and British Columbia yielded 3 Peregrine eyries in 1969, 2 of which had been found in 1968. Two other sites located in 1966 were not checked. All three eyries located in 1969 had full reproductive success and hatched 4 young each. Eleven young were known to survive at least to fledgling stage.

Much controversy has been voiced over the estimated number of Peregrine Falcon eyries in the Queen Charlotte Islands, and estimates have ranged to as high as 100 nests. The best figure available from an extensive 1966 survey (Davies and

Table 1. Arctic Canada Peregrine Nests

Arctic Coast						Mackenzie District			Yukon Territory									
1968			1969			1968			1969			1968			1969			
N	a	b	c	a	b	c	N	**	a	b	c	N	a	b	c	a	b	c
A	2	-	4	2	-	4	1		2	-	4	8	2	-	1	2	-	3
B	1	-	3	1	-	-	2		2	-	2	9	2	-	3	1	(2)	1
C	2	-	2	2	-	4	3		2	-	3	10	2	-	2	1	1	1
D	2	-	-	2	(2)	1	4		2	-	2	11	2	-	-	1	-	2
E	2	(2)	1	2	-	(3)	5		2	-	-	12	2	-	1	2	-	3
F				1	-	-	6		2	-	-	1	2	-	3	1	?	?
G				2	-	2	7		2	-	-	2	2	1	2	2	(1)	3
H				2	-	-	8		-	-	-	3	2	(1)	2	2	-	1
I				?	-	4	9		2	-	3	4	1	?	?	2	?	?
							10		-	-	-							
							11		-	-	-							
							12		1	-	1							
							13		1*	-	-							
							14		†	†	†							

N-nest; a-adults present; b-eggs in nest; c-young in nest;
()-addled eggs or dead young; **-all occupied;
*-male; †-not checked.

Blood) seems to be, in that year, 53 possible and 42 probable sites. In 1967, 46 sites were located, 23 with strong behaviour and/or young or eggs, 10 with lone adults, 9 with pairs present but apparently unsuccessful, 3 with pairs present but with no indication of nesting, and 1 with an adult male and immature female, also with no evidence of nesting. Probably the best qualitative data available for the Queen Charlotte Islands is from Langara Island where a total of 16 sites are known. The most known active eyries in any one year were 12 (F. Beebe) in the early 1960's. In 1968 only 5 eyries were occupied and in 1969 there were 6 occupied eyries, including 2 with immature females that made no nesting attempts.

Pesticide levels in some eggs collected in Canada are given in Table 4 (see Part 2).

Daniel Berger (Ungava, Quebec). Areas in Ungava were surveyed for Peregrine Falcons in 1967 by Daniel Berger and J. Weaver, and 14 active sites were located. The following list summarizes the findings at these eyries: No. 1—3 eggs, 1 sub-adult, eyrie later deserted; No. 2—4 young; No. 3—2 eggs (1 addled), sub-adult female; No. 4—2 eggs, 2 young; No. 5—1 young, 1 broken egg? No. 6—4 young; No. 7—2 young; No. 8—1 young, 2 cracked eggs; No. 9—1 young; No. 10—2 young; No. 11—empty scrape, sub-adult female; No. 12—2 young, 1 egg; No. 13—1 young; No. 14—3 young.

James Weaver (Ungava, Quebec). No data available for 1968, except D. Berger eyrie No. 14 occupied. Two eyries check in 1969, D. Berger No. 1 had 3 eggs which were eaten two weeks after the nest was first checked, D. Berger No. 14 had 3 eggs all of which hatched.

John Lejeune [presented by Hodson] (Ungava, Quebec). In 1969, 7 eyries of 8 found in 1968 were unoccupied, 1 had a pair present but apparently no nesting attempt was made. This area experienced a very cold, late spring, and at nesting time vegetation appeared to be approximately 3 weeks behind 1968, much snow was still present in many crevices and ravines, and ice was found on one eyrie ledge (July 3). Adverse weather conditions were therefore postulated as most probable cause of nesting failure.

(This report will be continued.)

SURVEY OF RAPTORIAL BIRDS ALONG THE PROPOSED TRANS-ALASKA PIPELINE SYSTEM

by

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Introduction.—This report summarizes our findings resulting from a survey (15 July to August, 1970) of cliff nesting raptors along the proposed oil pipeline route. The survey, under the auspices of the Bureau of Sport Fisheries and Wildlife, was to be primarily concerned with the density and status of Peregrine Falcons along the route. Because of the magnitude of such an undertaking, and in light of the function of the project, we confined the majority of our efforts to within one to two miles of the proposed pipeline right-of-way. The southern half of the route was surveyed by automobile while the northern half was covered by helicopter.

The Route.—The proposed Trans-Alaska Pipeline System (TAPS) bisects on a North/South axis the State of Alaska. The southern half of the route closely parallels the existing highway system. Its general route is: Valdez—Copper Center—Fielding Lake—Delta Junction—Fairbanks—Livengood.

The northern half of the route is: Livengood—Yukon River—South Fork Koyukuk River—along Middle Fork Koyukuk River—along Dietrich River—Atigun Pass—along Atigun River—along Sagavanirktok River—Prudhoe Bay.

Results.—*Valdez to Copper Center.* Many miles of suitable looking cliff occur in this section; notably from Keystone Canyon to Tiekel. The lack of previous observation of Peregrines in this region, and our not finding them, suggests that they indeed do not breed in the canyon. The habitat may be too enclosed to be suitable to Peregrines. The lateness of the snow about the cliffs may also hinder their breeding. Golden Eagles with one chick were nesting along this section.

Though not along the pipeline, the Copper River was checked by fixed-wing aircraft. This habitat appeared perfect for Peregrines, though we were unable to find a single sign of cliff nesting raptors from Gulkana to the bay.

Copper Center to Fielding Lake. The dirt banks along the Copper River in this region are marginal habitat for Peregrines. We were unable to find any. Along this section of route is a Golden Eagle nest and a long-established Gyrfalcon eyrie (though not in use this year).

Fielding Lake to Delta Junction. This habitat once again appears suitable for Peregrines. We found none. A Peregrine was observed in flight from our aircraft on the Delta River, however. None of the cliffs in the canyon mouths have been known to harbor Peregrines and we saw no indication of their presence.

Delta Junction to Fairbanks. The proposed route in this region crosses or passes several areas occupied by Peregrines. One of the traditional eyries was vacant this year. Apart from this site our survey revealed in this section one breeding pair with two eyasses, one non-breeding pair, and one cliff with signs of recent occupancy but no nesting success.

Fairbanks to South Bank of the Yukon River. This habitat is unsuitable for Peregrines except where creeks occasionally cut dirt banks or cliff faces on bluffs (most of these are marginal). Two pair of Golden Eagles were nesting in this section, each with one chick.

Yukon River. The proposed line crosses the river near high dirt banks on the river's north side. No Peregrines occupy these cut banks. Two active eyries were found several miles either side of the crossing. Both contained at least one eyass.

Yukon River to Coldfoot Camp. Most of the habitat in this region appears unsuitable for Peregrines. Gyrfalcons may nest on some of the rock pinnacles, but none were found. More likely, this is a wintering area for Gyrs. No nesting raptors were found though two old Eagle nests had recently been used by either Ravens or Gyrs.

Coldfoot to Atigun Pass. This section of the route runs along the Middle Fork of the Koyukuk River and the Dietrich River. It appears suitable for Peregrines though there is a conspicuous lack of riverside bluffs (which could explain their absence). Most cliffs are situated on mountain sides. There is also a decided lack of suitable hunting habitat adjacent to the river. Many Eagles occupy this region and their presence may affect in some way the suitability of the region

for Peregrines. It should be mentioned that most of the Eagle nests in this region were between 3000 and 3300 feet elevation, while the river bed and pipeline route is near or below the 1400 foot level. There was evidence of several recently-used Raven nests that may have harbored Gyrfalcons but another year's observation in June or early July would be needed to determine the precise status of Gyrfalcons. Two Eagle nests with one and two nests with two chicks each were located near the pipeline.

Findings in this area tend to suggest that much of the South Slope of the Brooks Range may be vacant of Peregrines. It is my understanding that the Alaska Department of Fish and Game plans on surveying most of the area in the near future. Their findings will either confirm or negate this projection. It is, however, becoming apparent that there are in Alaska large areas of suitable and even ideal habitat that is not and probably has not recently been utilized by Peregrines. Reason for this remains open to speculation.

Atigun Pass to Galbraith Lake. Once again Golden Eagles are the prime species. One nest with one chick was found at 4600 feet. A probable Gyrfalcon eyrie was found on the Atigun River.

Galbraith Lake to Franklin Bluffs. In this region the route runs through a deep canyon along the Atigun River to the Sagavanirktok River. Good habitat for both Falcons and Eagles is present, though river bluff cliffs are very limited in number. The last Peregrine Falcon habitat gives out at Franklin Bluffs. Few Rough-legged Hawks were nesting this year, probably due to a low in the microtine cycle. Many adult Rough-legs were seen but only two nests fledged one young each, and one fledged three. A pair of Peregrines was seen in the middle part of the river but the eyrie was not located. An adult Gyrfalcon, and what appeared to be a nesting site was found north of Sagwon. Two fledged Gyrs were seen at Galbraith near a probable nesting site. Two active Golden Eagle nests were found, north of Galbraith. On the lower Sagavanirktok a Gyrfalcon eyrie with at least two young on the wing was located. Also, two pair of Peregrines were present. One eyrie contained two eyasses and one contained three.

Conclusions.—The following conclusions were submitted to the Bureau summing up our findings and impressions gained this summer:

1. All nests and eyries found this summer are far enough from the proposed pipeline route that they won't be physic-

ally damaged or disturbed by the actual mechanics of pipeline construction.

2. During the construction we anticipate many *Buteo*, *Accipiter*, and owl nests to be found and some actually destroyed as trees are removed. This should present no real problem to the species involved as nesting habitat is in seemingly unlimited supply peripheral to the route.

3. The only active historically-known Peregrine eyrie or cliff that could harbor Peregrines, less than one mile from the proposed pipeline route, is on a tributary to the Tanana River. Construction of the access road may come closer to suitable cliffs although this was not indicated on the proposal given to us.

4. Along the Dietrich River many old Eagle nests were found in the mouth of canyons within one mile of the route. However, the nests in actual use were located rather far back on the mountain faces or in adjoining canyons. We are tempted to suggest that human activity may have caused such a shift in nest site placement or utilization.

5. There is one major problem that concerns us—the ready accessibility to nesting sites of such species as Peregrines and Gyrfalcons that will be provided by the construction of the access highway. This is especially criticized in light of the domestic demand for these two species, their present numerical status, and the threat of the ever-decreasing numbers of Peregrines caused by pesticides. Once the road is in one can foresee that other access roads will be built to villages, etc., adjacent to the pipeline or even rather distant from it. This will further open up falcon habitat to easy accessibility or exploitation. We cannot urge strongly enough that there be some control for limited access and human use of the road to the North Slope. (See also: White, C.M. and J.H. Streater, The Oil Pipeline and Peregrines in Alaska, p. 241 in The North American Peregrine Survey, 1970, T.J. Cade and R. Fyfe. *Canadian Field-Nat.*, 84(3):231-245.)

OBSERVATIONS ON THE ROLE OF NEST BOX SANITATION IN AFFECTING EGG HATCHABILITY OF WILD SPARROW HAWKS IN EASTERN PENNSYLVANIA

by

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Introduction.—In two recent papers discussing factors which could affect the breeding success of captive Sparrow Hawks (*Falco sparverius*) and/or other falcons, Porter and Wiemeyer (1970) and Nelson (1971:65) suggested that bacteria-contaminated nest boxes or material remaining in nest boxes from one year (breeding season) to the next may cause the death of some embryos in Sparrow Hawk eggs the following year. Nelson (1971:65) suggested that "It is possible that digestive tract contaminants (bacteria) from the nestlings in the nest one year may be able to survive overwinter and kill embryos in eggs laid at the same ledge the following year (or on the same nestbox litter, or in contact with the nestbox walls, in the case of captive Kestrels)."

This interesting hypothesis is worth considering in terms of the role which nest box sanitation may play in affecting egg hatchability rates, and hence breeding success, of wild Sparrow Hawks. During the period 1959 through 1966, 21 nests of wild Sparrow Hawks were located on Charlex Farm, Albany Township, Berks County, Pennsylvania (Heintzelman and Nagy, 1968). All nests were in boxes placed in suitable locations on the study area. To avoid unnecessary human disturbance of nesting birds, only 14 of the 21 nests were studied in varying degrees of thoroughness. However, during the period 1959 through 1966, once a nest box was placed on the study area no attempt was made to clean or disinfect it after a nesting season was completed. Any contaminants which accumulated in a box remained there. Thus, field data pertaining to Sparrow Hawk nest boxes which were used successively for two or more years might shed light on the role which bacteria may play in causing Sparrow Hawk embryo mortality in eggs deposited in a potentially contaminated nest box resulting from Sparrow Hawk use during a preceding breeding season.

Results.—Table one summarizes the clutch sizes and hatchability rates of those Sparrow Hawk eggs which were deposited in three different uncleaned nest boxes for two or more successive years (Heintzelman and Nagy, 1968:308).

Table 1. Hatchability Rates of Sparrow Hawk Eggs in Uncleaned Nest Boxes

Nest Number	Clutch Size	No. Eggs Hatched	% Eggs Hatched	No. of Males	No. of Females
1959B	2	2	100	1	1
1960B	5	5	100	2	3
1961B	6*	5	83	4	1
1962B	4	3	75	3	0
1963B	5	5	100	2	3
1965B	5	4	80	1	3
1966B	1	0	0	0	0
1961F	3	3	100	2	1
1962F	6	6	100	2	4

*One egg accidentally destroyed while being numbered.

The location of box B was particularly attractive to Sparrow Hawks during the eight years that the author, and/or Alexander C. Nagy, studied these birds. In fact, box B was utilized during seven of the eight years of this study, 1964 being the only year that it was unoccupied. However, during the eight years two different boxes actually were used by Sparrow Hawks at nest site B. From 1959 through 1961, one box was left intact at site B, and the hatchability rate of the clutches deposited in the box during 1959 and 1960 was 100 percent. Unfortunately, one of the six eggs in the 1961 clutch at site (=box) B accidentally was broken while being numbered. The remaining five eggs hatched successfully, however. By the end of the 1961 breeding season box B was so dilapidated that it was replaced with a new box which was fastened in exactly the same position as the old one. Thus, the replacement box still was referred to as box B because it was simply a replacement at site B. Sparrow Hawks readily

accepted replacement box B during the 1962 nesting season and had a 75 percent hatchability rate that year, followed by a 100 percent hatchability rate during 1963. The acceptance of the replacement box, incidentally, suggests that the site, rather than the actual nest box, was of primary importance to the falcons in their selection of an appropriate nesting place. In any event, the replacement box at site B was not utilized during 1964. However it was again used during 1965 with an 80 percent hatchability rate, and during 1966 with a zero percent hatchability rate.

The third example of a Sparrow Hawk nest box, used successfully for successive years, was box F. This structure was utilized during 1961 and 1962, with a 100 percent hatchability rate recorded for both years.

The over-all hatchability rate of the 55 Sparrow Hawk eggs deposited in 14 nests studied in Berks County, Pennsylvania, during the eight year period 1959 through 1966 was 78 percent (Heintzelman and Nagy, 1968:309). However, the over-all hatchability rate of Sparrow Hawk eggs deposited in three nest boxes during two or more successive years was 82 percent. Considered individually, "old" box B produced a 94.3 percent average hatchability rate during the period 1959 through 1961, "new" (=replacement) box B produced an 87.5 percent average hatchability rate during 1962 and 1963, "new" (=replacement) box B produced a 40 percent average hatchability rate during 1965 and 1966, and box F produced a 100 percent average hatchability rate during 1961 and 1962.

Discussion and Conclusion.—As in many studies, more questions are raised than are answered. For example, is it possible that the difference between the diets of the wild Sparrow Hawks nesting in eastern Pennsylvania (Heintzelman, 1964) and the diets of captive birds nesting at Patuxent Wildlife Research Center (Porter and Wiemeyer, 1970) could affect the type and extent of bacterial contamination in Sparrow Hawk nest boxes? Porter and Wiemeyer (1970:600) suggest that gram-negative motile rods, such as *Proteus* sp., may be responsible for entering Sparrow Hawk eggs and killing embryos. Would the excrement of captive birds nourished on a diet formulated by man be more likely to support bacteria such as *Proteus* sp. than would the excrement of wild Sparrow Hawks feeding upon wild animals such as those reported by Heintzelman (1964) for the population of falcons considered in this paper? Microbiologists might find it inter-

esting to investigate such a possibility.

In any event, the data from the wild population of nesting Sparrow Hawks considered in this paper are not sufficiently numerous to permit more than a tentative conclusion to be reached regarding the role which nest box sanitation may exert as a factor limiting the egg hatchability rate, and hence breeding success, of wild Sparrow Hawks. However, the available data suggest that nest box sanitation is not an important factor in causing embryo mortality in eggs of one population of wild Sparrow Hawks.

Acknowledgments.—My appreciation is extended to Alexander C. Nagy who supplied background information regarding his maintenance of nest boxes on the study area.

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